UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/834,770	04/13/2001	Nicolai Kosche	SUN-P5558-RJL	3758

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A. Richard Park
Park, Vaughan & Fleming LLP
Suite 201
508 Second Street
Davis, CA 95616

EXAMINER
TANG, KUO LIANG J

ART UNIT	PAPER NUMBER
2122	3

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

		Application No.	Applicant(s)
Office Action Summary		09/834,770	KOSCHE ET AL.
		Examiner	Art Unit	
		Kuo-Liang J Tang	2122	

-- *The MAILING DATE of this communication appears on the cov r sheet with the correspond nce address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *13 April 2001*.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is

   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-30* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-30* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

    1.☐ Certified copies of the priority documents have been received.

    2.☐ Certified copies of the priority documents have been received in Application No. _____.

    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage

       application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date <u>2</u>.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-30 are pending and have been examined. The priority date for this application is
04/13/2001.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1-3, 7-10, 11-13, 17-20, 21-23 and 27-30 are rejected under 35 U.S.C. 102(b) as

being anticipated by Crank et al., US Patent No. 5,583,988 (art of record, hereinafter Crank).

As Per Claim 1, Crank teaches that a method and apparatus for performing runtime

checking during program execution in a compiled environment using the full ANSI-C

programming language. (E.g. see Abstract and associated text). In that Crank discloses the

method that covering the steps of a method for detecting violations of type rules in a computer

program, comprising:

"receiving the computer program;" (E.g. see Fig. 29B-31B, c:\erik\ptrderef.c and

associated text);

"locating a type casting operation (E.g. see Fig. 29B-31B, line 6 (ptr = &a[11]) and

associated text) within the computer program, wherein the type casting operation involves a first

pointer and a second pointer;" (E.g. see Fig. 29B-31B and associated text. For Example, the first

pointer is pointed to base of array a[], and the second pointer is pointed to the offset 10 (the 11th

element of array a[]);

"checking the type casting operation for a violation of a type rule; and

if a violation is detected, indicating the violation." (E.g. see Fig. 29B-31B, Runtime Errors

message and associated text).

As Per claim 2, the rejection of claim 1 is incorporated and further Crank teaches:

"wherein checking the type casting operation involves determining if the first pointer is

defined to be a structure pointer (E.g. see Fig. 29B-31B and associated text, the first pointer is

pointed to base of array a[]) and the second pointer is not defined to be a structure pointer(E.g.

see Fig. 29B-31B and associated text, the second pointer is an offset to the base of array a[]), and

if so, indicating a violation if no char exception applies.".

As Per claim 3, the rejection of claim 2 is incorporated and further Crank teaches:

"generating a warning (E.g. see col. 19:45-48, warning) to warn a programmer of a

potential type violation if the second pointer is a void or char pointer(E.g. see Fig. 11 and

associated text) ; and

"generating an error to indicate a type violation to the programmer if the second pointer

is a pointer to a scalar." (E.g. see Fig. 29B-31B, Runtime Errors message and associated text).

As Per claim 7, the rejection of claim 1 is incorporated and further Crank teaches:

"wherein the computer program is received in source code form, and wherein the method

further comprises parsing the computer program into an intermediate form prior to locating the

type casting operation." ." (E.g. see Fig. 27 library object code 1108 and associated text).

As Per claim 8, the rejection of claim 1 is incorporated and further Crank teaches:

"receiving an identifier (E.g. see Fig. 1B step 132 and associated text) for a set of constraints on memory references that a programmer has adhered to in writing the computer program;" and

"using the identifier to select a type casting rule from a set of type casting rules, the selected type casting rule being associated with the set of constraints; wherein each type casting rule in the set of type casting rules is associated with a different set of constraints on memory references." (E.g. See Fig. 2A step 222 and associated text and See Fig. 11 and associated text).

As Per claim 9, the rejection of claim 1 is incorporated and further Crank teaches:

"wherein the method is performed by a compiler." (E.g. see Fig. 1A step 44 and 107 and associated text).

As Per claim 10, the rejection of claim 1 is incorporated and further Crank teaches:

"wherein the method is performed by an error checking application, which is not part of a compiler." (E.g. see Fig. 27 library object code 1108 and associated text).

As Per Claim 11, is the computer-readable storage medium claim corresponding to the method claim 1 and is rejected under the same reason set forth in connection of the rejection of claim 1.

As per Claims 12-13 and 17-20, the rejection of claim 11 is incorporated and are rejected

under the same reason set forth in connection of the rejection of claims 2-3 and 7-10 respectfully.

As Per Claim 21, is the apparatus claim corresponding to the method claim 1 and is

rejected under the same reason set forth in connection of the rejection of claim 1.

As per Claims 22-23 and 27-30, the rejection of claim 21 is incorporated and are rejected

under the same reason set forth in connection of the rejection of claims 2-3 and 7-10 respectfully.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

Claims 4-6, 14-16 and 24-26 is rejected under 35 U.S.C. 103(a) as being unpatentable

over Crank in view of SUN Microsystem, Inc "C User's Guide Supplement for the Forte

Developer 6 update 1 (Sun Workshop 6 update 1)", Part No. 806-6145-10, October 2000,

Revision A, XP-002242198 (art of recode, hereinafter SUN) further in view of Kosche et al. US

Patent No. 6,718,542 (hereinafter Kosche).

As Per claim 4, the rejection of claim 1 is incorporated and further Crank teaches

"wherein if the first pointer is defined to point to a first structure type (E.g. see Fig. 11, col. X ,

row 9 (struct) and associated text) and the second pointer is defined to point to a second structure

type (E.g. see Fig. 11, col. Info , row 9 (STRUCT) and associated text), " and "generating an

error to indicate a type violation" (E.g. see Fig. 29B-31B, Runtime Errors message and

associated text). Crank does not explicitly disclose determining whether the first structure type

and the second structure type belong to the same alias group. However, SUN, in an analogous

art, discloses the use of "the first structure type and the second structure type belong to the same

alias group;" (E.g. see SUN page 12, Example 3, bp = (struct bar *) (&fp->f2) and associated

text, e.g. at page 12, last paragraph, fp->f2 and bp->b2 do not alias.) but does not explicitly

discloses how to determine whether such structure types belong to the same alias group. Kosche,

however in an analogous art, further discloses such a known determining step (E.g. see Kosche

art col. 21:50). Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to incorporate the teaching of SUN and Kosche into the system of

Crank, to determine whether the first structure type and the second structure type belong to the

same alias group. The modification would have been obvious because one of ordinary skill in the

art would have been motivated to make sure that there is no type violation happens during

program compilation.

As Per claim 5, the rejection of claim 4 is incorporated and further Crank does not

explicitly disclose keeping track of special program statements that link structure types into alias

groups; determining that the first structure type and the second structure type belong to the same

alias group if the first structure type and the second structure type are the same structure type, or

if one or more special procedures link the first structure type and the second structure type into

the same alias group. However, in an analogous art, SUN discloses "keeping track of special

program statements that link structure types into alias groups (E.g. See SUN page 18, Example 7,

line 3, "pragma alias (struct foo, struct bar)" and associated text) and the use of the first structure

type and the second structure type belong to the same alias group; (E.g. see SUN page 12,

Example 3, bp = (struct bar *) (&fp->f2) and associated text, e.g. at page 12, last paragraph, fp-

>f2 and bp->b2 do not alias.) but does not explicitly discloses how to determine whether such

structure types belong to the same alias group. Kosche, however in an analogous art, further

discloses such a known determining step (E.g. see Kosche art col. 21:50). Therefore, it would

have been obvious to one of ordinary skill in the art at the time the invention was made to

incorporate the teaching of SUN and Kosche into the system of Crank, to track of special

program statements that link structure types into alias groups and determine whether the two

types belong to the same alias group. The modification would have been obvious because one of

ordinary skill in the art would have been motivated to prevent type violation happening during

program compilation.

As Per claim 6, the rejection of claim 5 is incorporated and further the combination of

Crank and SUN do not disclose such a determining step. Kosche, however in an analogous art,

further discloses "determining that the first structure type and the second structure type belong to

the same alias group if the first structure type and the second structure type have all the same

basic types in the same order" (E.g. see Kosche col. 21:50 and col. 2:46-49"). Therefore, it

would have been obvious to one of ordinary skill in the art at the time the invention was made to

incorporate the teaching of Kosche into the system of Crank as modified by SUN, to track of

special program statements that link structure types into alias groups and determine whether the

two types belong to the same alias group. The modification would have been obvious because

one of ordinary skill in the art would have been motivated to prevent type violation happening

during program compilation.

As per Claims 14-16, the rejection of claim 11 is incorporated and are rejected under the

same reason set forth in connection of the rejection of claims 4-6 respectfully.

As per Claims 24-26, the rejection of claim 21 is incorporated and are rejected under the

same reason set forth in connection of the rejection of claims 4-6 respectfully.

Conclusion

3.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Kuo-Liang J Tang whose telephone number is 703-305-4866.

The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Tuan Q Dam can be reached on 703-305-4552.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9306.

Kuo-Liang J. Tang

Software Engineer Patent Examiner

TUAN DAM
SUPERVISORY PATENT EXAMINER